

AD-A252 816

Approved
Vo. 0704-0188

REPORT DOCUMENTATION

1a. REPORT SECURITY CLASSIFICATION
UNCLASSIFIED

JUL 15 1992

2a. SECURITY CLASSIFICATION AUTHORITY

2b. DECLASSIFICATION / DOWNGRADING SCHEDULE

3. DISTRIBUTION / AVAILABILITY OF REPORT

This document has been approved
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4. PERFORMING ORGANIZATION REPORT NUMBER(S)

DOD POP HM TR/AYD 92-004

5. MONITORING ORGANIZATION REPORT NUMBER(S)

6a. NAME OF PERFORMING ORGANIZATION

PACKAGING DIVISION

6b. OFFICE SYMBOL
(If applicable)

SMCAR-AEP

7a. NAME OF MONITORING ORGANIZATION

6c. ADDRESS (City, State, and ZIP Code)

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT,
AND ENGINEERING CENTER
PICATINNY ARSENAL, NJ 07806-5000

7b. ADDRESS (City, State, and ZIP Code)

8a. NAME OF FUNDING / SPONSORING
ORGANIZATION8b. OFFICE SYMBOL
(If applicable)

9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

8c. ADDRESS (City, State, and ZIP Code)

10. SOURCE OF FUNDING NUMBERS

PROGRAM
ELEMENT NOPROJECT
NO.TASK
NO.WORK UNIT
ACCESSION NO.

11. TITLE (Include Security Classification)

Performance Oriented Packaging (POP) testing of M722 White Phosphorus Filled Body Assemblies
for 60mm Mortar (208) Packed in a Wood Pallet Container. Drawing 12937963.

12. PERSONAL AUTHOR(S)

Yuen H. Lam

13a. TYPE OF REPORT

Final

13b. TIME COVERED

FROM _____ TO _____

14. DATE OF REPORT (Year, Month, Day)

15. PAGE COUNT

16. SUPPLEMENTARY NOTATION

17. COSATI CODES

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

FIELD

GROUP

SUB-GROUP

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report contains the test results performed on the M722 White Phosphorus
(WP) Filled Body Assemblies for 60mm mortar packed 208 per wood pallet container.

92-18151

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT

☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS

21. ABSTRACT SECURITY CLASSIFICATION

UNCLASSIFIED

22a. NAME OF RESPONSIBLE INDIVIDUAL

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22c. OFFICE SYMBOL

SMCAR-AEP

I.. Report Number: DOD POP HM TR/AYD 92-004

II. Title: Performance Oriented Packaging (POP) testing of M722
White Phosphorus (WP) Filled Body Assemblies for 60mm
Mortar (208) Packed in a Wood Pallet Container

Drawing Number: 12937963

Author: Yuen H. Lam

Performing Activity: ARDEC

Address: Department of the Army
Commander, U.S. Army Armament Research, Development
and Engineering Center
Picatinny Arsenal, N.J. 07806-5000
Attn: SMCAR-AEP

Date: June 1992

Distribution Statement A.

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Justification	
By	
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Availability Codes	
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A-1	

1. Data:

Container:

Type: Container, Pallet, Wood
UN Code: 4C1
Specification: MIL-P-15011
Drawing Number: 12937963
Material: Wood
Maximum net mass: 298 kg (656 lbs)
Dimensions: 121.9 X 101.6 X 36.2 cm³
(48 X 40 X 14 1/4 in³)
Gross Weight: 386 kg (850 lbs)

Product:

Name: WP Filled Body Assembly, M722, 60mm
Drawing Number: 15-12-344
Cage Code: 81361
United Nations Proper Shipping Name: PHOSPHORUS, WHITE
United Nations Identification Number: 1381
United Nations Packaging Group: I
Physical State: Solid
Number of Body Assemblies per Container: 208
National Stock Number (NSN): 1310-01-260-8728

2. Reference Material:

- a. Federal Register, "49 CFR Part 107-179"
- b. United Nations, "Transport of Dangerous Goods"

3. Background:

This report details Performance Oriented Packaging (POP) tests done on 208 60mm M722 WP Filled Body Assemblies packed in a wood container configuration supported by a standard 48 X 40 4-way entry wood pallet in accordance with drawing 12937963. Each body assembly weighs approximately 2.91 lbs. The weight of the packed out tested container was 850 lbs (386 kg). Tests were performed according to POP test regulations.

4. Test:

The following POP tests were performed at ambient temperature:

• a. Vibration Test (178.608)

Procedure:

Two pallet containers were vibrated on a vibrating platform unrestrained for a two hour time period each. The double-amplitude (peak-to-peak displacement) was one inch and the frequency was 220 cycles per minute. The frequency was sufficient to allow the package to become completely airborne and enable a 1/16" piece of strapping material to be slid underneath the package during vibration.

Results:

After the tests, the pallet containers experienced no structural damage; there was no spillage of contents; the passing criteria was met.

b. Drop Test (178.603)

Procedure:

Three pallet containers were tested. The first one was dropped in three orientations: flat on the bottom, flat on the top, and flat on the long side. The second pallet container was dropped flat on the short side, and the third one on the corner. The height for all five drops was 5.9 ft (1.8 m)

Results:

There was no significant structural damage on the first four drops. On the fifth drop (on the corner) one steel banding strap, placed around the pallet container along the longitudinal direction, broke, and the impact corner received minor damage. However, all contents remained inside the container and the package was capable of being handled without danger of spillage. The passing criteria was met.

c. Stacking Test (178.606)

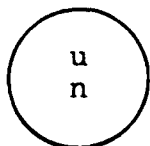
Procedure:

The pallet container that had been previously dropped on the corner was reused for the stacking test. A well-distributed dead load of 10,500 lbs was applied to the top of the pallet container for a 48 hour period. This simulates a stack height of 16 ft (13 layers) of identical packages.

Results:

Neither deformation nor damage was observed on the pallet container after the test. The passing criteria was exceeded.

5. Based on the above POP testing, the following POP symbol has been applied to pallet containers in accordance with drawing 12937963.



4C1/X386/S/**
USA/DOD/AYD

Insert the last two digits
of year packed.